

# METHOD AND SYSTEM FOR THE TRANSMISSION OF INFORMATION IN A TELEPHONE EXCHANGE SYSTEM

## FIELD OF THE INVENTION

5           The present invention relates to telecommuni-  
cation systems. In particular, the invention relates  
to a new type of method and system for selecting a  
password encrypted with the right software version in  
a telephone exchange system.

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## BACKGROUND OF THE INVENTION

          A telephone network generally consists of a  
plurality of separate telephone exchanges connected to  
each other via transmission lines. The telephone net-  
15       work is managed and maintained via an operation and  
maintenance network (O&M-network), which can be imple-  
mented e.g. on the basis of the services of an X.25  
packet network. The operation and maintenance network  
is created by connecting to it the telephone exchanges  
20       and other network components to be controlled. The  
other network components to be controlled include e.g.  
the transcoder (TC), base transceiver station (BTS)  
and base station controller (BSC). The functions for  
operating the telephone network are mainly concen-  
25       trated in control rooms and in network elements cen-  
tralizing operation and maintenance functions. An ex-  
ample of centralizing network elements like this is  
the DX 200 OMC manufactured by Nokia.

          From centralizing telephone network elements,  
30       it is possible to set up remote session connections to  
other telephone exchanges or telephone switching sys-  
tems. When a remote session is established, the source  
system, i.e. e.g. a centralizing network element,  
sends user identification data, a user identification

code and a password, to the target system. The target system is e.g. a telephone switching system.

In the DX 200 telephone switching system and in the user interface (Man Machine Interface, MMI) of the operation and maintenance network, the user's authority and rights are determined on the basis of the user identification (user ID). The MMI system is a certain aggregate of peripherals and software which can be used to execute operation and maintenance functions. For each user ID, an individual password has been defined for the verification of authenticity of the user. To minimize the data security risks, it is necessary to change the password frequently enough to ensure that a person not authorized to use a user ID will not be able to utilize a user ID not belonging to him/her.

In the above-mentioned system, the problem is that different network elements may have different versions of password encryption software. At present, user identification on a remote connection is so implemented that, if the software versions in the source system and in the remote system differ from each other, the user must enter the required password again when the remote session is started.

The object of the present invention is to eliminate the drawbacks referred to above or at least to significantly alleviate them.

A specific object of the invention is to disclose a new type of method and system which will obviate the need for re-input of a password, thus improving the convenience of use from the user's point of view.

As for the features characteristic of the present invention, reference is made to the claims.

## SUBJECT OF THE INVENTION

The method of the invention concerns the se-

lection of the manner of transmission of a password in a telecommunication network. The telecommunication system of the invention preferably comprises a source system, a target system, an operation and maintenance network established between the source and target systems and an operation and maintenance center connected to the operation and maintenance network. The source and target systems are e.g. telephone switching systems. In the method, log-on in the source system is accomplished by giving a user identification and a valid password corresponding to it. After the user ID has been entered, a remote session connection is set up via the operation and maintenance center to the target system. According to the invention, a check is carried out to establish whether the target system is using a different version of password encryption software than the source system. This check can be performed by both the source system and the target system.

In the source and/or target system, passwords associated with different versions of password encryption software have been stored. If the password encryption software version in the target system is an earlier version than that of the source system, then the password associated with the password encryption software version used in the target system is sent to the target system. Correspondingly, if the password encryption software version of the target system is newer, then the password associated with the password encryption software version in the source system is sent to it.

The system of the invention comprises means for comparing the password encryption software versions of the source and target systems with each other and means for sending to the target system a password consistent with an earlier software version, associated with the user ID in question.

In an embodiment of the invention, the system comprises means for storing in a certain predetermined space the passwords belonging to user identification codes, associated with different versions of password encryption software of the source and/or target system.

As compared with prior art, the present invention provides the advantage of making it unnecessary for the user to input the password again when establishing a remote connection to a target system. The password encryption software versions in the target and source systems are compared with each other and, based on this, the right password is selected.

## 15 LIST OF ILLUSTRATIONS

In the following, the invention will be described in detail by the aid of some of its embodiments with reference to the drawings, wherein

Fig. 1 presents a preferred system according to the invention, and

Fig. 2 presents an example of a flow diagram representing the establishment of a remote connection.

## DETAILED DESCRIPTION OF THE INVENTION

The system presented in Fig. 1 comprises a source system LE1, a target system LE2, an operation and maintenance network OM established between the source and target systems (LE1, LE2) and an operation and maintenance center OMC connected to the operation and maintenance network OM. The source and target systems are preferably telephone switching systems. The telephone switching system is e.g. a DX 200 switching center manufactured by the applicant, and the operation and maintenance center OMC is e.g. a DX 200 OMC. In addition, the system comprises means 1 for comparing the password encryption software versions in the

target system LE2 with each other and means 2 for sending to the target system LE2 the password consistent with an earlier software version, associated with the user identification in question. Moreover, the system comprises means 3 for storing the passwords belonging to user identification codes and associated with different versions of password encryption software of the source and/or target system (LE1, LE2) into a certain predetermined space.

Fig. 2 is a flow diagram representing an example of the establishment of a remote connection according to the invention. The user of the system wants to establish a remote connection to a target system he has selected, block 20. The user is e.g. an operator who is observing the operation of the system. The user logs on in the source system by supplying his user identification and the password corresponding to it, block 21. Each user identification is associated with closely defined rights assigned in advance. In other words, the user can only access functions agreed beforehand.

Further, a remote session connection to the desired target system is set up via the operation and maintenance center, block 22. Non-transparently to the user, the password encryption software versions in the source and target systems are compared with each other, block 23. This may result in one of three different situations, on the basis of which the right password to be sent to the target system is selected, block 24. In relation to the password encryption software version in the source system, the software version in the target system is

the same, or  
later, or  
earlier.

In the first case, the password is sent in the normal manner to the target system.

In the second case, before the comparison of the passwords, the target system must be informed that the source system has an older software version, because otherwise the target system would consider the password incorrect and close the connection setup procedure. In the present case, the target system is aware of the variations in passwords associated with different software versions. Thus, the target system is able to compare the received password with the right password.

In the third case, the password encryption software version in the target system is older than that in the source system. In this case, before sending the password, the source system must find out which software version is in use in the target system. Having received this information, the source system can send the right password to the target system.

The invention is not restricted to the examples of its embodiments described above, but many variations are possible within the scope of the inventive idea defined in the claims.